MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday July 19, 1994.

Action Items:

88. Obtain drawings from SBRC for CDR Actions 65 & 68. Assigned to Ken Anderson 5/19/94. Due 6/15/94

89. Investigate the availability and adaptability of surplus metal shipping containers for MODIS. Assigned to Bauernschub 6/20/94. Due 8/ 2/94. CLOSED 7/20/94

90. Clarify what is required of SBRC to allow GSFC qualification of flight detectors. Assigned to Silva 6/30/94. Due 8/ 2/94

91. Clarify the round-robin BRDF measurement requirements. Assigned to Guenther. Due 8/16/94

92. Determine the best way to balance the scan mirror. Assigned to Roberto. 7/19/94. Due 9/ 6/94.

The following items were distributed:

1) Weekly Status Report #147
2) SBRC Memos submission from week #139
3) Minutes of the previous team meeting

Attendees:

✓ Richard Weber	Bruce Guenther	Larissa Graziani
✓ John Bauernschub	✓ George Daelemans	✓ Bob Martineau
✓ Rosemary Vail	John Barker	Bob Silva
Lisa Shears	✓ Patricia Weir	Robert Kiwak
Mike Roberto	✓ Mitch Davis	✓ Harvey Safren
✓ Nelson Ferragut	Jack Ellis	✓ Ed Knight
Gene Waluschka	✓ Ken Anderson	✓ Harry Montgomery
Bill Barnes	Rick Sabatino	✓ Marvin Maxwell
Les Thompson	✓ Cherie Congedo	✓ Bill Mocarsky
		Rick Mills

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Ed Knight has sent to Ken Anderson and Dick Weber comments on the Calibration Management Plan in a telemail message dated July 20.

George Daelemans has mentioned about the need to use results from the thermal analysis of the electronics parts in the stress analysis of the electronic parts and in computing overall instrument reliability. This will be discussed with quality assurance personnel.

The blackbody calibrator was heated too high which caused surface finish deterioration.

Nelson Ferragut has distributed to several engineers in Code 700 a request to determine the best way to measure scan motor imbalance and the effects of high speed testing of the bearings. Nelson has also made requests for a reference source and is approaching this work from the point of view of design, analysis, rotor balancing, and monitoring behavior. SBRC will get a chance to balance the scan motor in March of 1995.

Dick Weber and Joe Bolek have suggested a couple of approaches to be analyzed for determining scan mirror imbalance . Dick's approach would have the motor/encoder and scan mirror hanging from a rod attached to a ceiling. The translation of the motor/encoder during operations at the nominal orbital scan speed would be measured using a capacitive measurement approach, strain gauges, or some other method of measuring a change in gap. Joe's approach would have the motor/encoder up on flexible stilts. There is the question in any approach of the effect of air interacting with the scan mirror.

The question about the relative sampling times for the 250 m, 500 m, and 1 Km bands is still outstanding. Mitch Davis will be looking into what is involved in changing sample timing so that the signal between the 50% points of the 250 m bands will be centered on the 50 % response points for a 500 m band, and so forth for the centering of two 500 m bands on one 1 Km band.

Gene Waluschka is at SBRC for a few days this week. He is observing work related to alignment of the focal plane assemblies on the aft optics assembly and the alignment of the afocal telescope mirrors on a test fixture.

Mitch Davis had the following items:

1) SBRC completed the bake out of the Engineering Model (EM) Main Electronics Module (MEM). There was no Quartz Crystal Micro balance (QCM) in the test chamber.

2) The two micron Actel Field Programmable Gate Arrays (FPGAs) are too slow. SBRC is considering the one micron FPGAs. The radiation hardness of the one micron FPGA has not yet been addressed.

Bob Martineau mentioned the following:

1) The Protoflight Model (PFM) Long Wave Infrared (LWIR) Photo Conductive (PC) has had ten temperature cycles. SBRC is continuing on the build. Next they will attach the cable assembly, small components, and then the Sensor Chip Assembly (SCA).

2) Non LWIR have four motherboard pedestal assemblies in progress (three with one backup).

3) Flight level testing of Visible (VIS) and Near Infrared (NIR) arrays is being done using validated stations at SBRC.

4) The first set of three Short/Midwave Infrared (S/MWIR) SCAs has been diced.

5) The first S/MWIR SCA will be tested the first week of August. The second SCA will be cold tested.

6) Low background cold probe data has been received. The leakage current is down by a factor of 16. Cold probe station results are looking good.

7) PC array production and testing: Two potential backup arrays have passed Noise Equivalent Irradiance (NEI) testing and are now in spot scan test (crosstalk, uniformity, active area, etc.).

8) Band 1 and 2 in the NIR have active areas 10 % larger than spec in the scan direction. In the cross scan direction, the problem is not seen. Bob thinks it just may not be noticed there. SBRC is looking for the cause of the problem by varying biases to see if the guard ring is really biased, etc. Tom Pagano thinks this problem is a non issue. Bob suggested testing a pixel on the end of the array to see if it appears larger

in the cross scan direction, since adjacent pixels might affect observations in the cross scan direction. Bob also mentioned the effect may be due to collecting charge from outside the active area because of diffusion.

The following systems minutes are from Tom Pagano:

Posted: Tue, Jul 19, 1994 12:45 PM EST Msg: RJJE-1562-5537/20 From: ("RFC-822":<SB06685(a)msgate.emis.hac.com>, SITE:NASA)

CC: mroberto/GSFCMAIL Subj: Systems Minutes 7/19/94

RFC-822-Headers: Original-To: ;@distribution (see end of body) PP-Warning: Parse error in original version of preceding To line From: Pagano, Thomas S Date: Tue, Jul 19, 1994 10:15 AM Subject: Systems Minutes 7/19/94 To: Alferd, Vernon W; Banach, Joseph A SB03476; Bates, Duane M; Bortfeldt, Paul E; Cooley, Robert C; Cushman, William H; De Forrest, Allen L; Dowler, Mary B SB07498; Durham, Rodney M; Gudgeon, Ed; Julian, Richard L; Kampe, Thomas U; Koch, Thomas L; Mehrten, John A; Phan, Dzung V; Plews, Gordon S; Roberto, M; Tessmer, Arnold L; Therrien, Neil J; Tomlin, Janet T; Weinstein, Oscar; Wolverton, Thomas E; Young, James B

Below are minutes from the 7/19/94 Systems Meeting

Alferd: PSA done 1st of October. Mechanical design is in drafting.

Pagano: We discussed the need for a computer controlled rotating polarizer; perhaps it could be manual.

Plews: Need the speed of a computer controlled system.

Pagano: Concern of interface/software/synchronization issues and associated cost/schedule. We discussed possibility of varying source intensity rather than spectral shaping filters and ND filters.

Plews: May affect halogen cycle.

Young: True, we may want to use other lamps, however there is a question of stability. Jim uncertain as to the effects of ND filters on polarization. Taking fewer points in the sine wave but still taking a full cycle may be an option. Jim to investigate.

Pagano: Obtained measurements of SWIR/MWIR & LWIR focus. At this time; very successful obtaining usable signals for all FPAs. Charge subtraction working. LSF's obtained have allowed determination that the SWIR/MWIR is =18 mils out of focus. LWIR still being analyzed. Noticed some unuable pixels on the SWIR/MWIR like Band 5 pixel 10.

Pagano: Need to turn on PC channels; would like assistance from detector lab and GSE.

Alferd: Will provide Mike Wu.

Dowler; Will conctact Tom Molyneux.

Banach: Have we resolved issues with the temperature sensors.

Koch: S. Iveland has taken cables and split out separate leads for the temperature sensors; i.e. bypassed the BAEM. Using a lakeshore current source and a DVM we're assessing the PMIRR cooler is achieving 81 to 82K with the FPAs running.

Dowler: Provided NIR SCA and NIR detector on fanout for band 1 band 2 crosstalk testing. Bob Martineux mentioned that we may try scanning the end pixel in band 1 and 2 in the track direction to see if the guard is working.

Kampe: A test is to be performed whereby a spot will be scanned across a band 1 band 2 filter. Mechanics still to be worked out.

Plews: What spurious responses have we seen in IR bands?

Pagano: Have seen some anomalies, but the results are inconclusive and may very likely be attributed to the charge subtraction circuitry. Flight operation will not use the charge subtraction circuitry.

Wolverton: Has received new levels for acceleration from the GIIS. We may only need to do-sine bursts in 2 directions.

Durham: Contract mod signed.

Mehrten: What is the status of the balance requirement?

Pagano: GSFC to analyze effects on bearings of higher spin rate required in order to do the balancing. Appears that Martin is assuming worst case in their analyses, have seen a resonance with their solar panel and are fixing it by making the instrument disturbance go to nearly zero, rather than solving the resonance problem with the spacecraft.

Bates: Jim writing memo on determing which test need a purged environment. Reviewing test procedure development process.

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